Heliform Injection of Current (H/C) for Efficiencies of Conductivity Approaching Superconductivity for Long-Distance Power Transmission with Slight Modification to Existing System

5 January 2023
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Introduction

Helical electromagnetism has already proven highly useful in the fields of microscopy and helicity-based signal authenticity verification/noise filtering for jamming-resistant GPS.

Direct current is the least efficient method of delivery of electricity through a conductive wire. The Hall Effect causes electrons to tend to curve toward the periphery of the conductive wire where they leak in the form of both radio emission and magnetism.

Alternating current works by simultaneously projecting three streams of electricity in which each stream is offset in terms of phase, allthewhile moving in parallel with one another. The net effect of this is that electrons tending to curve toward the periphery of the conductive wire are pushed back toward the center continually by the complementary magnetic force of the other streams. The more precisely these streams are kept in balance, the more efficient the transmission of alternating current. Furthermore, the higher the voltage, the greater the benefit in efficiency of alternating current. This is part of the reason why electricity is transmitted, as much as possible, at extremely high voltage and is stepped down in intervals using transformers before being delivered to customers.

Abstract

Much of the cost associated with power transmission is attributable to transformer and substation maintenance. If electricity could be transmitted at lower voltages, the overall cost of transmission could be greatly reduced. While absolute superconduction at room temperature continues to be one laudable objective and while I have already proposed solutions for both superconduction and pseudo-superconduction, I would now suggest that quasi-superconduction may be another reasonable approach to attempt to demonstrate.

I propose that this may be achieved by emitting helical electricity through (modified) existing copper wires in a pattern that achieves what alternating current does with greater efficiency than alternating current, but slightly less efficiency than true superconductivity. For practical purposes, if we can get to within one or two percentage points of true superconductivity at low voltages, it may well-be more cost-effective than an expensive replacement system based upon absolute superconductivity that requires entirely new infrastructure. This system, although it would require replacement transmission lines, would eliminate transformers from the equation.

If electricity were emitted helically through a copper wire, something could be achieved that is in many ways the opposite of the elementary school electromagnet experiment that every student must recall with the copper wire and the iron nail. In the case of that sort of electromagnet, passing electricity repeatedly through the wake of magnetism generated by other lengths of the same wire causes the Hall Effect to be amplified purposefully. Conversely, our object is to counteract or mitigate the Hall Effect insofar as is possible.

In simplest terms, the opposite of conveying direct current through a wire and bending the wire to form a helical shape is to convey helical electricity through a straight wire.

In this proposed power transmission scheme, the electricity hugs the walls of the wire and the Hall Effect, although a constant, pushes the electrons toward the center of the wire instead of from the center of the wire toward the edge. This could be thought of as analogous to the difference between a three-speed transmission and an infinitely variable transmission in an automobile. Although three-phase alternating current is more efficient than two-phase, the benefit is maximal at three phases and diminishes if a fourth phase is added to the traditional form of alternating current.

Rather than offsetting the phase of three streams, a specialized magnet can be used at the point of entry of the electricity into the grid to offset the spin angle of the electrons relative to their angular momentum. This spin angle can be measured in degrees and can be varied depending upon factors such as the amperage needing to be transmitted and the thickness of the wire.

Although electricity would be primarily injected from the edge of the wire and not the center, some amount of electricity would be carried by all parts of the wire including areas near to the center. The spin offset would be lesser depending upon distance from the edge the injection point. At the exact center of the wire, no electricity at all would be injected. In fact, it is critical that no electricity be carried by the central strand of what is in actuality a bundle of thin wires. The centralmost strand would ideally be coated with an electrical (but not magnetic) insulator. This turns out to be critical for maximizing the longevity of the helical configuration, which otherwise would become disorganized before long.

The reason that the central strand needs to remain electrically null is that if pure direct current with absolutely no spin offset were to be carried even accidentally by the line, the traditional Hall Effect would overcome the artificial inward-facing Hall Effect created by the helicity of the electricity as injected. Since all of the electricity is constantly tending to fall toward the center, if it were allowed to reach that point, its momentum would ultimately carry it out of the other side of the wire. Thus, the range would be merely double the range of direct current; well short of the present range of alternating current.

Conclusion

The simple addition of this insulated core strand (when coupled with helicization of the electricity) is the foundation of H/C power transmission. In

this configuration, high voltages and transformers are not required to facilitate delivery of large quantities of power over ranges of hundreds of miles.